

REMARKS

Claims 1, 2, 4 and 8 are pending in this CPA continuation application. In response to the decision of the Board of Patent Appeals and Interferences, dated February 25, 2002, claim 1 has been amended and new claim 8 has been added. It is believed that all claims as now presented are patentably distinguishable over the prior art. Favorable reconsideration is respectfully solicited.

The Board decision, at page 7, discusses Appellant's contention that two differently configured impurity region portions warrant patentable significance. The decision held that such arguments are not commensurate with the recited structure in claim 1 (as presented on appeal). The decision concluded that there was "no reason why the impurity region (12) in Fig. 15 of the disclosure (prior art) cannot be considered as having two regions, one closer to the lower end of the connection hole and the other away from the lower end of the connection hole and proximate to the strip-shape region (3)."

Claim 1 has been amended to recite, *inter alia*,:

the cross-sectional width of the first impurity region portion being smaller than the cross-sectional width of the second impurity region portion.

As now amended, claim 1 explicitly recites differences between the configurations of the two impurity region portions that preclude an arbitrary division of the impurity region 12 of the prior art Fig. 15 into two separate impurity regions having different cross-sectional widths. The prior art impurity region has a cross sectional width of little variation. There is no depth that demarcates a discernible division between two distinct portions of the prior art impurity region. A person of ordinary skill in the art would not have recognized the prior art figure as depicting a lower impurity region portion having a smaller cross-sectional width than the width of a higher impurity region

portion, as required by amended claim 1. Newly added claim 8, dependent from claim 1, further requires that the width of the first impurity region is approximately equal to the internal diameter of the connection hole. The prior art represented by Fig. 15 lacks any such feature.

As claim 1 has been amended to recite specific structural differences between the two impurity region portions, it is submitted that the arguments presented in the Appeal Brief with respect to this feature now are commensurate with the recited structure. As urged in the Brief, the claimed impurity region portions have configurations, identifiably distinct from each other, and are formed by different steps in the manufacturing process. The recited first impurity region portion (52), which connects the interconnection layer to the deep isolation region, is formed by application of relatively high energy through a narrow opening in the contact hole. The recited second impurity region portion, which does not extend to the isolation region, is formed by application of relatively low energy through a wider opening in the contact hole. These steps are depicted in Figs. 9-12 and the accompanying description in the specification. The purpose for forming these two distinct impurity portions, described above, is to overcome a significant problem with the prior art Fig. 15 embodiment, *i.e.*, the likelihood that the single impurity region of Fig. 15 can extend to a width sufficient to short circuit adjacent capacitor storage nodes. The present invention suppresses lateral extension of first impurity region 52 so that adjacent first impurity regions 52 are not brought into contact with each other. It is the inventors of this application that have identified this problem and provide the solution.

It is submitted, therefore, that the single impurity region of prior art Fig. 15 does not inherently comprise two impurity region portions as required by claims 1, 2, 4 and 8

and that it would not have been obvious change the configuration of the prior art impurity region to two portions identifiably distinct from each other. Allowance of the application is respectfully solicited.